

Amendments to the Specification:

On page 1, before the first paragraph of the specification, please insert the heading:

BACKGROUND

Please amend the third paragraph of page 1, spanning lines 9-18, to read as follows:

Since it is quite uncomfortable for a patient being disposed in a large bore of the main superconductive magnet of an MR imaging apparatus, there is a trend to use shorter magnets while moving the patient table or couch through the bore of the magnet. Such an apparatus is described e. g. in EP-A 1 024 374 US 6,385,478. In an MR imaging apparatus excitation pulses are applied to a restricted region of the magnet bore, in which the field is uniform. The data samples collected are Fourier transformed to form a volumetric image of the restricted region. A motor continuously moves a patient couch so that a region of interest passes through the region of good field. The collected data samples are corrected to compensate for the motion so that a volumetric image is formed of greater length than that of the restricted region.

On page 1, after line 26, please insert the heading:

SUMMARY

On page 2, please delete the first full paragraph (lines 3-5) in their entirety.

~~These objects are achieved by a method as claimed in Claim 1, by an MR apparatus as claimed in Claim 11 and by a computer program product as claimed in Claim 13.~~

On page 2, please amend the third paragraph spanning lines 13-15 as follows:

These and other advantages of the invention are disclosed in the dependent claims and in the following description in which an exemplified embodiment of the invention is described with respect to the accompanying drawings. ~~Therein shows:~~

On page 2, after line 15, please insert the heading and following paragraph:

BRIEF DESCRIPTION OF THE DRAWINGS

The invention may take form in various components and arrangements of components, and in various steps and arrangements of steps. The drawings are only for purposes of illustrating the preferred embodiments and are not to be construed as limiting the invention.

On page 2, line 24, please delete the heading "~~Basic principles and notations~~" and replace it with the heading:

DETAILED DESCRIPTION

On page 3, line 25, please delete the heading "~~Basic idea of the invention~~"

Please amend the paragraph beginning on page 3, line 26 and continuing to page 4, line 7 as follows:

The clinical doctor wants information from a relatively large volume of interest of the patient 1. Data is acquired while the table or bed 2 is moving relative to the main magnet 4. The displacement Δ thereof relative to the magnet 4 is known at any time. The whole of the MR acquisition is split up in a number of receive situations. During each situation, the excitation and presaturation profiles "travel" with

the patient 1. The acquired data are phase-corrected for the offset of table 2 at which they are acquired. During a receive situation, information from the patient 1 is acquired using any MR imaging sequence of any orientation. In practice it may be useful either to orient artefacts (e. g. flow artefacts) in an appropriate direction, or to orient single slices to some preferred orientation M with respect to a specific human-tissue structure of the patient. However, the information may be seriously undersampled. An example of this method is sketched in Fig. 2. For every receive situation, we acquire, nominally the volume indicated by a box 11. This means that a multitude of points 12 will fold onto the results of this receive situation. This multitude may be a one-dimensional row parallel to P₁, a two-dimensional row or even a continuum of folding locations which is the case in e. g. spiral acquisition.

On page 5, lines 1-2, please delete the heading "Measuring the patterns Calibration"

On page 6, line 5, please delete the heading "Problems"

On page 6, line 18, please delete the heading "First solution" and replace it with the heading "First Embodiment".

On page 7, line 1, please delete the heading "Second solution" and replace it with the heading "Second Embodiment".

On page 8, line 5, please amend the heading "Receiving and reconstructing the actual data"

On page 8, please amend the paragraph spanning lines 6-17 as follows:

~~In the section "basic idea of the invention" the~~ The receiving and reconstruction of data has been explained above to a great extent. The data is acquired using relatively large steps between profiles, resulting in a (nominally) small "folding volume", i.e., into lots of folding. For non-cartesian sequences this means

that data is sampled relatively sparse. The full extent of k-space is acquired during one scan situation, and the displacement during one scan situation is a fraction (e. g. 1/3) of the homogeneity volume. Every incoming sample is acquired at a very specific value of Δ_{sample} . This is taken into account by multiplying every sample of the incoming data with $\exp(-ikT\Delta_{\text{sample}})$. Here, T is the coordination transformation from patient coordinates to scan coordinates, which is relevant for oblique scanning. That operation "displaces" the acquired data to the centre of the patient, even if that is way out of the homogeneity volume. Obviously, one can simplify things by correcting with a fixed Δ_{profile} per profile.

Please amend the paragraph beginning on page 9, line 22 and continuing to page 10, line 3 as follows:

In Fig. 4 (a) a very simplified patient 15 is depicted which diagrammatically ~~consists of~~ includes two parts at different positions: a first part shown as block 16 and a second part shown as heart 17. Fig. 4 (b) shows the imaging while the block 16 is largely in the centre of the main magnet and the heart 18 is more remote and thus distorted. As shown in Fig. 4 (c) the distorted heart 18 folds onto the block 16, due to undersampling. Yet, the heart 18 is fainter, since it has seen less excitation. In another receive-situation according to Fig. 4 (d), the heart 17 is in the centre of the main magnet 4 and the block 19 is more remote and thus distorted. Due to undersampling, this is measured in that receive-situation, as shown in Fig. 4 (e). So the images in Fig. 4 (c) and Fig. 4 (e) are actually measured, Fig. 4 (f) shows the result after SENSE-unfolding, which consists of two linear combinations of Fig. 4 (c) and Fig. 4 (e). It is imperfect, e. g. the right part of it ~~consists of~~ includes the block 16 plus an unsubtracted heart 18 plus a "wrongly subtracted" heart 17 (dashed) and a second-order error (dotted). In Fig. 4 (g) is shown a purposely distortion in the same manner as in (b), under the condition that (f) is available. Fig. 4 (h) shows the final result where part of (f) is subtracted from its folded counterpart, and part of (g) is added, resulting in only second-order artefacts.

On page 10, after the last paragraph, please insert the following new paragraph:

The invention has been described with reference to the preferred embodiments. Modifications and alterations may occur to others upon reading and understanding the preceding detailed description. It is intended that the invention be constructed as including all such modifications and alterations insofar as they come within the scope of the appended claims or the equivalents thereof.